Canada's Aging Population and Long-Term Projections for Federal Finances

by Jake Fuss and Steven Globerman

Summary

■ Canada's fiscal challenges extend far beyond just the short-term impact of COVID-19. An aging population will continue to place upward pressure on federal finances and a new structural imbalance between revenues and spending means deficits and debt are likely to continue growing for decades to come.

■ A lower population growth rate coupled with increasing life expectancy means that the share of the population over 65 is projected to increase to 25.6 percent by 2068. This will require greater spending on income transfer programs to seniors like Old Age Security (OAS) and the Guaranteed Income Supplement (GIS).

■ Declining population growth combined with an aging population also means that Canada will likely face a declining labour force participation rate, a slower growing labour force, and slower tax revenue growth.

■ Spending on elderly transfer benefits is expected to peak at about 3.2 percent of GDP by 2031, an increase of almost 0.5 percentage points from the expected spending level in 2021.

■ The long-term projections demonstrate that based on current trends, the federal government is not on track to balance its budget at any point during the next three decades.

■ In our baseline scenario, the federal debt-to-GDP ratio might reach 69.6 percent by 2050, which would be the highest ratio recorded since 1948. If interest rates equal or surpass GDP growth, this ratio could exceed 100 percent of GDP between 2034 and 2039 depending on the extent of the difference between interest rates and GDP growth.

Introduction

The economic effects of COVID-19 have posed new challenges for federal finances given substantial increases in spending coupled with declining revenues. Recent projections from the federal government indicate that it could run a $343.2 billion deficit this year, representing 15.9 percent of GDP, which would be the largest deficit in Canadian history (DOF, 2020a).[1] However, Canada's fiscal challenges extend far beyond just the short-term impact of COVID-19.

Unfavourable demographic changes, specifically a decreasing rate of population growth along with an aging population will also place additional pressure on federal finances from both the revenue and expenditure sides. As a consequence, the federal government will need to spend substantially more money in order to meet higher demand from programs such as Old Age Security (OAS) that provide assistance to the elderly in Canada. As well, there may be pressure for increased federal transfer spending to the provinces for health and social services due to population aging. Furthermore, expectations are that a lower proportion of Canadians will participate in the labour force in the long-term. Simply put, an aging population means slower rates of economic growth, increased expenditures on the elderly and, likely, slower growth in federal net revenues, holding other things constant.

The combination of increased spending and slow revenue growth suggests that large and growing federal government deficits are likely to persist for the foreseeable future unless the federal government changes its current course.[2] This implies that the federal debt could skyrocket over the next 30 years or so, especially if interest rates increase, which would add a faster accumulating interest cost component to the deficit. Provincial and local governments will also experience fiscal challenges, as an aging population will place upward pressure on health care expenditures and other services for the elderly. In addition, if the federal government is forced to borrow more in capital markets, this will likely make borrowing more expensive for lower levels of government, since the latter competes with the federal government in the capital market. However, our focus in this paper will only be on federal finances.

This report offers a simple long-term projection for federal finances incorporating the implications of COVID-19, an aging population, and the subsequent structural imbalance between revenues and spending. The first section examines how Canada's economy is expected to be affected by changing demographics and the recent recession. The second section identifies the impact of these developments on federal finances, focusing particularly on changes in benefits to the elderly. Finally, the third section includes a long-term forecast for the annual budgetary balance and projections for the federal debt-to-GDP ratio through 2050.

Demographic changes and implications

Canada's population growth rate is determined by its birth rate, death rate, and net immigra-

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[1] This may even be an optimistic scenario. The deficit could climb beyond $400 billion this year with new spending on the Canada Recovery Benefit (CRB) program and Employment Insurance (EI), as well as possible spending on "green" infrastructure and childcare (Ivison, 2020; Syal, 2020).

[2] Prior to the COVID-19 pandemic, a 2018 report from the Department of Finance [DOF] had already indicated the federal government was not on track to balance its budget until 2040.

Figure 1: Canada's Population Growth Rate, 1950-2068
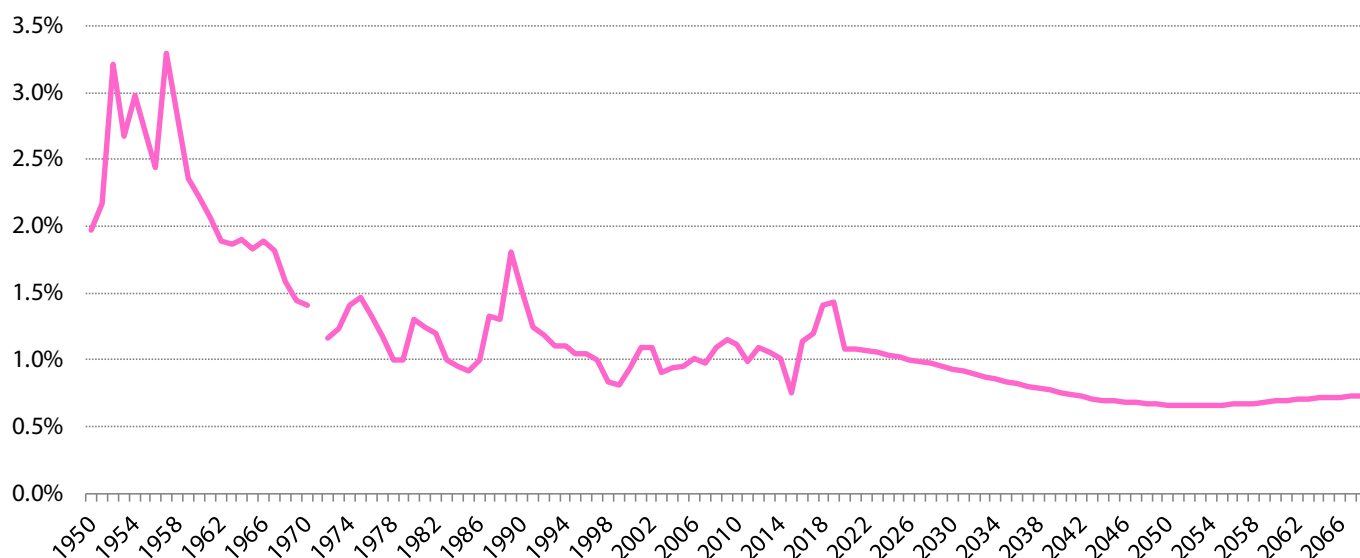
Notes: (1) Data for 1971 is omitted due to a level change in the definition of the series; (2) Data from 2020 to 2068 is a projection using the medium-growth scenario (M1).
Sources: Statistics Canada (2020a, 2020b, 2020c); calculations by authors.

tion.[3] Over several decades, the country's fertility rate has dropped, and Canadians are no longer having enough children to replace the existing population given current mortality rates. In recent years, net immigration has played a much bigger role in driving population growth for Canada than it did in past decades. Despite this increase in net immigration, however, there has been a slowdown in population growth. For instance, the average annual population growth rate in the 1950s and 1960s was 2.3 percent (Statistics Canada, 2020a). This is more than double the average annual population growth of 1.1 percent over the most recent 20-year period from 2000 to 2019 (Statistics Canada, 2020b). But population growth is expected to grow even more slowly in the future. Based on Statistics Canada's medium growth

projection,[4] the population growth rate is expected to be between 0.8 to 1.1 percent per year through 2041 and remain constant at 0.7 percent thereafter (see figure 1).

At the same time, life expectancy for Canadians is projected to continue increasing. From 1960 to 2018, life expectancy at birth increased for men from 68.3 years to 79.9 years and for women from 74.2 years to 84.1 years (World Bank, 2020). The medium-growth scenario from Statistics Canada anticipates life expectancy at

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[3] Net immigration is the difference between in migration and out migration in the country.

[4] This is based on Statistics Canada's M1 projection for population growth. The medium-growth (M1) scenario expects the total fertility rate will reach 1.59 children per woman in 2042/2043 and remain constant thereafter; interprovincial migration is based on the trends observed between 1991/1992 and 2016/2017; the immigration rate reaches 0.83 percent in 2042/2043 and remains constant thereafter.

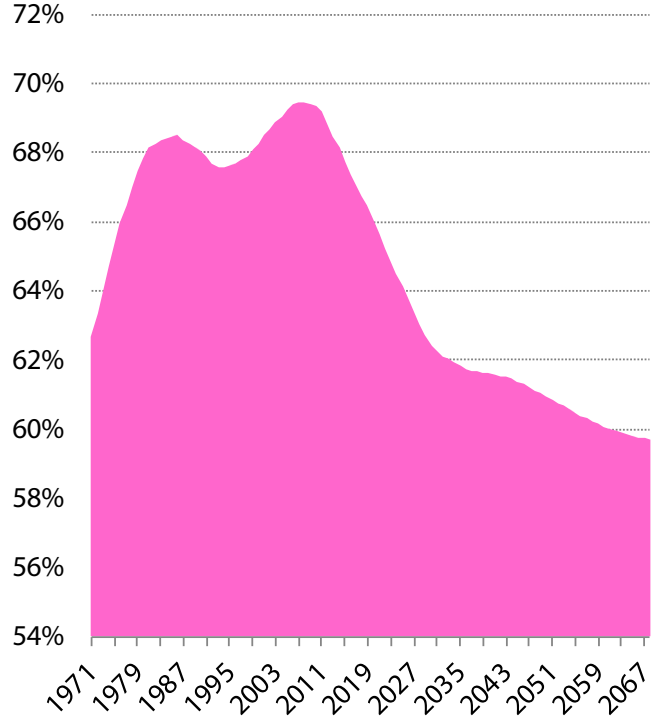## Figure 2: Share of population over 65 years old, 2010-2068
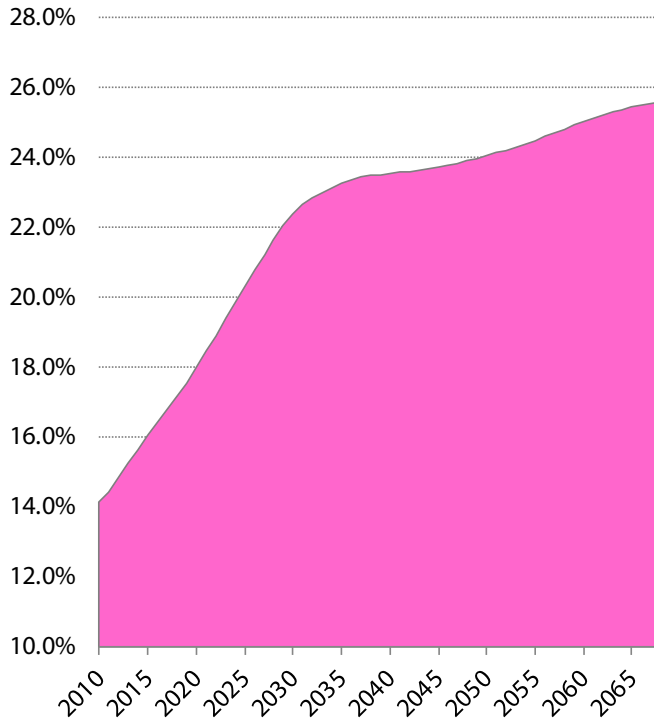
Note: Data from 2020 to 2068 is a projection using the medium-growth scenario (M1).

Sources: Statistics Canada (2020b and 2020c); calculations by authors.

Figure 3: Share of population between 15 and 64 years old, 1971-2068
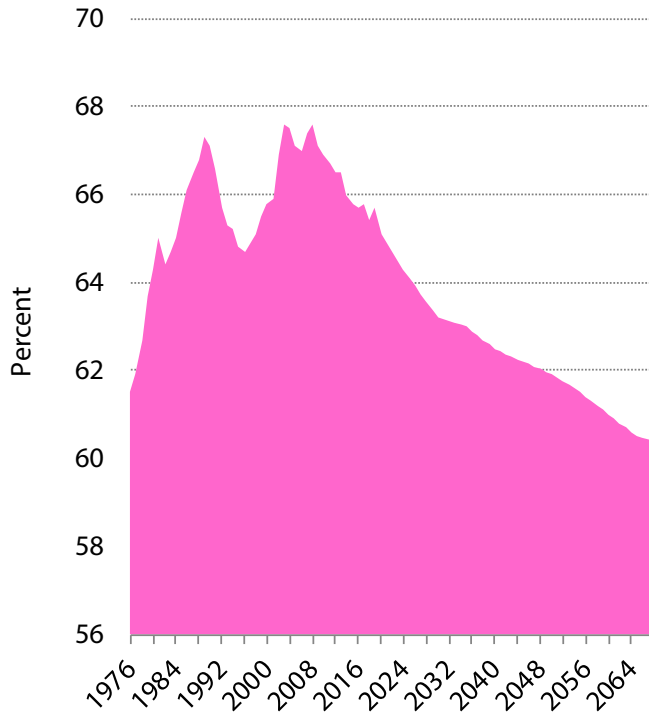

Note: Data from 2020 to 2068 is a projection using the medium-growth scenario (M1).

Sources: Statistics Canada (2020b and 2020c); OSFI (2019a); calculations by authors.

birth could reach 87.0 years for males and 89.0 years for females by 2068.

A slower population growth rate combined with increasing life expectancy means that seniors will comprise a larger share of Canada's future population. Figure 2 identifies the actual and projected seniors' share of Canada's population from 2010 to 2068.

Over the last decade, the share of the population aged 65 and older has increased from 14.1 percent to 18.0 pe cent and is expected to continue rising. The rate of growth will be highest from now until the mid-2030s, at which

point the share of the population over age 65 will have reached more than 23 percent. After the mid-2030s, the rate of growth in the seniors' share of the population is projected to slow down but the actual share will continue to grow such that more than 25 percent of Canada's overall population will be 65 years or older by 2068.

Figure 3 demonstrates how the share of the population aged 15 to 64 (encompassing the working age population) is expected to evolve. Working age Canadians accounted for 62.7 percent of the total population in 1971, as the baby

Figure 4: Labour Force Participation Rate, 1976-2068

Note: Data from 2020 to 2068 are a projection from OSFI (2019a).

Sources: Statistics Canada (2020d); OSFI (2019a); calculations by authors.

boomers entered the labour force (Statistics Canada, 2020b). By 2007, the working age share of the population peaked at 69.5 percent. Since then, this proportion has decreased and fell to 66.5 percent in 2019 (latest year of available data). As the baby boomers continue to retire, the working age share is expected to decline further and return to the 1971 level within the next decade. By 2068, it is projected to fall below 60 percent (Statistics Canada, 2020c).

An increasing share of seniors plus an accompanying decline in the share of working age Canadians means that the labour force participation rate—the total labour force as a share of the working age population—will decline substantially over the next five decades or so. Figure 4 uses data from Canada's chief actuary to show that the country's labour force participation rate is expected to decline from 65.7 percent to 60.4 percent between 2019 and 2068 (OSFI, 2019a). To put this in perspective, the labour force participation rate was 61.5 percent in 1976. This forecast signals that the labour force will have millions of fewer Canadians participating than if the participation rate remained at its 2019 level.

The additional implications of COVID-19

With a declining labour force participation rate and in the absence of dramatic productivity gains, the size of the Canadian economy will likely be smaller relative to scenarios where the size of the labour force participation rate remains constant or increases.[5] This reduction in economic growth means that the tax base on which federal taxes are levied will grow relatively slowly given the existing tax structure and tax rates. Moreover, the effects of COVID-19 will exacerbate these economic challenges due to the likelihood of greater and possibly prolonged unemployment, weak economic growth, and limitations on immigration.

The latest estimates from the federal government anticipate that nominal GDP will contract by 6.3 percent in 2020, marking a significant setback for the Canadian economy (DOF, 2020a). Although projections from TD Bank forecast that nominal GDP will rebound next year by 7.0 percent, the size of the Canadian economy is likely to return only to 2019 levels (TD Bank, 2020). These forecasts suggest that the country's future GDP

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[5] In principle, the impact of a shrinking workforce on economic growth can be offset by increasing labour productivity.

Figure 5: Projected Increase in Income Support Programs for the Elderly as a Percent of GDP, 2021-2050
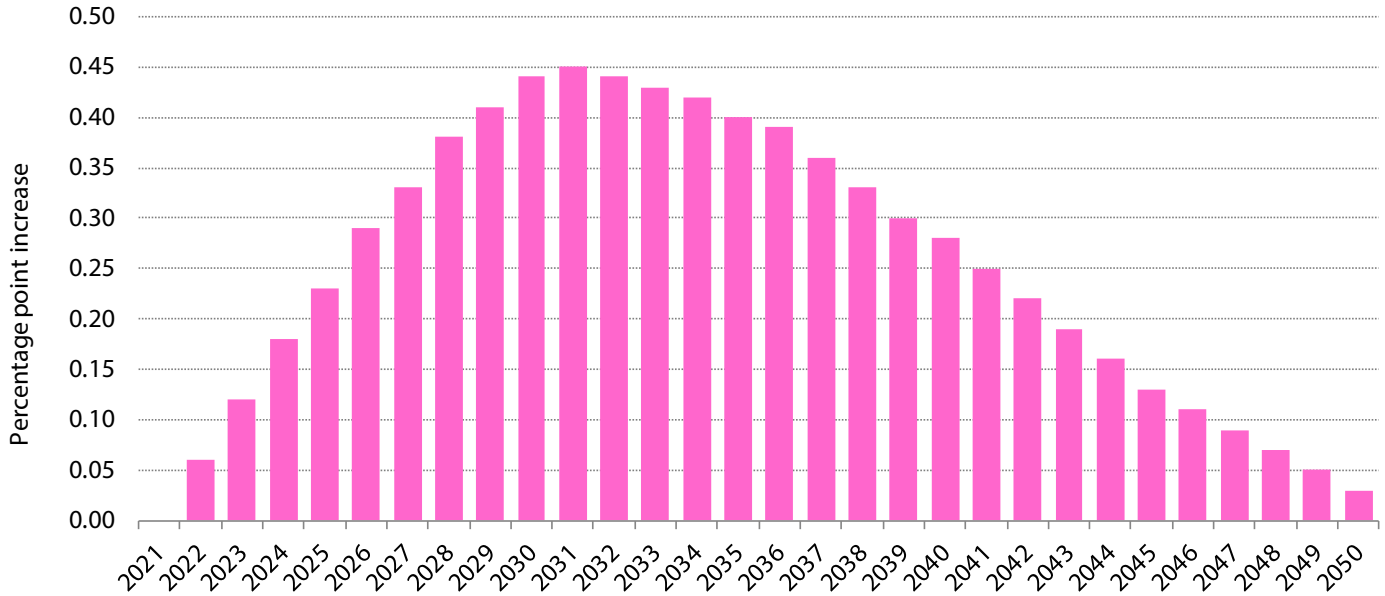
Sources: : OSFI (2019b); calculations by authors.

levels will be lower than previously anticipated, meaning income growth, job creation, and growth in federal tax revenues may be slow or even nil for some time. Put simply, COVID-19 has shrunk the tax base and therefore the government's ability to raise revenues, while also likely causing a long-term increase in spending due to higher-than-anticipated unemployment rates.

Impact of the aging population on government spending

An aging population will primarily affect federal finances by requiring higher spending on income transfer programs to seniors, such as Old Age Security (OAS) and the Guaranteed Income Supplement (GIS). In 2020, federal spending on elderly benefits (OAS and GIS) is expected to total $59.2 billion, which represents 2.7 percent of GDP (DOF, 2020a). Based on forecasts from

Canada's chief actuary, spending on elderly benefits is likely to reach nearly 2.8 percent of GDP in 2021 and increase further over the coming decades (OSFI, 2019b).

Figure 5 shows the projections from Canada's chief actuary estimating the increase in program spending on elderly benefits until 2050 as the population ages. Spending on elderly benefits is expected to peak at about 3.2 percent of GDP by 2031, an increase of almost 0.5 percentage points from the expected spending level in 2021. This increase would be equivalent to roughly $10.1 billion more being spent on elderly benefits in 2019 dollars. Spending on elderly benefits after 2031 is projected to continue to increase as a share of GDP compared to 2021 levels, but at a slower rate. By 2050, program spending on OAS and GIS will return to a comparable share of GDP as the expected level in 2021.

Canada's aging population will also require increased health care spending as an elderly population consumes more health care resources, since the elderly are more vulnerable to illnesses and chronic diseases that require acute medical attention (Jackson et al., 2017). However, the federal government is unlikely to bear the bulk of this increase directly since health care is largely a provincial government responsibility and most of the financial strain will be borne by the provinces. Nevertheless, the federal government does provide some health care funding to the provinces in the form of the Canada Health Transfer (CHT). For instance, the provinces received $41.9 billion in health transfers from federal coffers in 2020 (DOF, 2020a).

The CHT is currently legislated to grow in line with a three-year moving average of nominal GDP, which means that federal health care funding will not grow as a percentage of GDP unless a new funding agreement is reached between the provinces and the federal government (DOF, 2020b). In this regard, there will likely be significant political pressure exerted on the federal government from the provinces and citizens in the near future to increase CHT funding as a share of GDP from current levels. Given these considerations, it is certainly possible that the federal government will increase its CHT funding, thereby further straining its financial situation. For simplicity, however, this study assumes that the CHT will continue to grow at the same rate as nominal GDP.

To summarize, the population demographics suggest that in future federal government spending will increase relative to federal government revenues unless appropriate public policy measures to restore balance are put in place. Hence, while federal government debt is already expected to climb past $1 trillion this year (DOF, 2020a), an aging population will put further pressure on federal finances for decades to come.

Long-term fiscal balance

To illustrate the potential size of the looming fiscal imbalance, figure 6 reports actual and expected government spending and revenues from 1990 to 2050. Our analysis assumes that federal revenue as a share of GDP will return to its 2019 level (14.8 percent) next year (2021) and remain at this level until 2050.[6] However, we recognize that this might be an optimistic assumption considering the expected magnitude of the drop in federal government revenue in 2020. In fact, the federal government anticipates total revenues will decline from 14.8 percent of GDP in 2019 to 12.5 percent of GDP in 2020 (DOF, 2020a). Revenues should rebound in 2021, but it is difficult to predict the extent of that rebound. Using 14.8 percent therefore appears to be a reasonable assumption for a long-term forecast of federal government revenue as a share of GDP, but there is considerable uncertainty surrounding that assumption.

The introduction of new spending measures related to COVID-19 means that total federal spending is now anticipated to hit 28.4 percent of GDP this year, barring further policy changes or unexpected developments (DOF, 2020a). This is a substantial increase from 2019 spending when total expenditures accounted for "only" 16.3 percent of GDP. New programs such as the Canada Emergency Response Benefit (CERB) and Canada Emergency Wage Subsidy (CEWS) are responsible for the bulk of the increase in spending, as the government plans to spend

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[6] Slow growth in revenues due to an aging population mean that federal revenues are likely to grow at a rate equivalent to nominal GDP. This means revenues should remain constant as a percentage of GDP.

$155.3 billion, or 7.2 percent of GDP, on those two programs in 2020 (DOF, 2020a).

Our analysis assumes that all COVID-related spending measures will be eliminated in 2021 and total federal spending will grow at a rate consistent with previous trends.[7] As a starting point, we assume that major transfers to other levels of government will grow with nominal GDP and that the Canada Social Transfer (CST) increases by 3.0 percent in 2021.[8] In addition, we assume that EI benefits and direct program expenses in 2021 are increased from 2019 levels by approximately 11.0 percent.[9] This is calculated under the assumptions that, in the absence of COVID-19, program spending would grow by 3.7 percent as budgeted in 2020 (the expected nominal GDP growth prior to COVID-19) and that spending grows further in 2021 by the expected nominal GDP growth of 7.0 percent (DOF, 2019b; TD Bank, 2020). Elderly benefits also increase as a share of GDP based on forecasts from Canada's chief actuary (OSFI, 2019b). Finally, public debt charges in 2021 are assumed to remain at the same share of GDP as they were in 2020 (0.9 percent) to represent our

baseline. The result is that total federal spending is estimated to decline from 28.4 percent of GDP in 2020 to 17.4 percent in 2021. Under this approach, federal spending as a share of GDP in 2021 is higher than 2019 primarily due to the drop in overall nominal GDP levels.

Using 17.4 percent of GDP as our baseline for federal spending in the long-term forecast, we then account for the expected increase in federal expenditures on elderly benefits as a share of GDP from 2021 until 2050, as shown in figure 5. For instance, federal spending will reach 17.9 percent of GDP in 2031 when expenditures on elderly benefits are projected to reach their highest amount as a percentage of GDP. Based on holding revenue constant at 14.8 percent of GDP, the increased government spending on elderly benefits means that the gap between federal revenues and expenditures will peak at 3.1 percent of GDP in 2031 and remain at a high level throughout the forecast time period, reaching 2.7 percent of GDP in 2050. Simply put, there will be a large structural imbalance between revenues and spending for several decades.

The projections demonstrate that the federal government is not on track to balance its budget at any point during the next three decades based on current trends. As can be seen in figure 6, the annual federal deficit is expected to average about 2.9 percent of GDP due both to the current structural imbalance between revenues and spending and demographic changes placing higher demands on federal spending. For perspective, the federal deficit was equivalent to 1.5 percent in 2019 (DOF, 2020a). In contrast, the federal deficit in 2050 (2.7 percent of GDP) will be nearly double what it was in 2019 and only approximately a percentage point lower than it was during the 2009 recession (3.6 percent of GDP).

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[7] Again, this may be an optimistic assumption given that the federal government is rumored to be planning a "transformation" of the role of government and tens of billions in new spending (Ivison, 2020).

[8] These projections come from the assumptions used in the 2018 *Update of Long-Term Economic and Fiscal Projections* (DOF, 2018).

[9] Recent announcements state that the federal government will spend $37 billion on employment insurance provisions and other income supports over the next year. It is unclear, however, how much of this will be spent in 2020 versus 2021 and whether these amounts were already partially accounted for in July's fiscal snapshot. Our estimates provide only a conservative assumption of EI-related spending.

Figure 6: Canada's Fiscal Squeeze in Historical Perspective

Sources: Canada, Department of Finance (2019a and 2020a); calculations by authors.

Federal debt projections

The following analysis identifies the effect of a prolonged imbalance between federal revenues and spending on federal debt. Specifically, figure 7 shows the federal-debt-to-GDP ratio between 1990 and 2020, with additional projections until 2050 in the baseline scenario. Our estimates assume that nominal GDP grows at the rates forecasted by TD Bank between 2021 and 2025 and at the rates forecasted in the latest long-term projections from the Department of Finance in the years following (TD Bank, 2020; DOF, 2018).

At the starting point, the federal debt-to-GDP ratio is estimated to be 49.1 percent in 2020 based on current projections from the federal government (DOF, 2020a). The federal debt-to-GDP ratio declines marginally in 2021 due to abnormally high (assumed as discussed ear-

lier) nominal GDP growth (7.0 percent), but proceeds to increase in each subsequent year, as economic growth returns to a more normal assumed rate. In fact, our baseline scenario demonstrates that the federal debt-to-GDP ratio is projected to reach 69.6 percent by 2050, which would be the highest ratio recorded since 1948 (Di Matteo, 2017). Importantly, this is higher than the federal debt-to-GDP ratio of 66.8 percent in 1995 when Canada narrowly avoided a debt and currency crisis. For historical perspective, the Chrétien government implemented significant policy changes in its 1995 Budget and began to bring this ratio down to stabilize federal finances and avoid the looming crisis (Watson and Clemens, 2020).

However, if interest rates rise over the next 30 years, the federal debt-to-GDP ratio will climb higher than in the base case forecast. Using a

Figure 7: Actual and Projected Federal Debt-to-GDP Ratio, 1990-2050
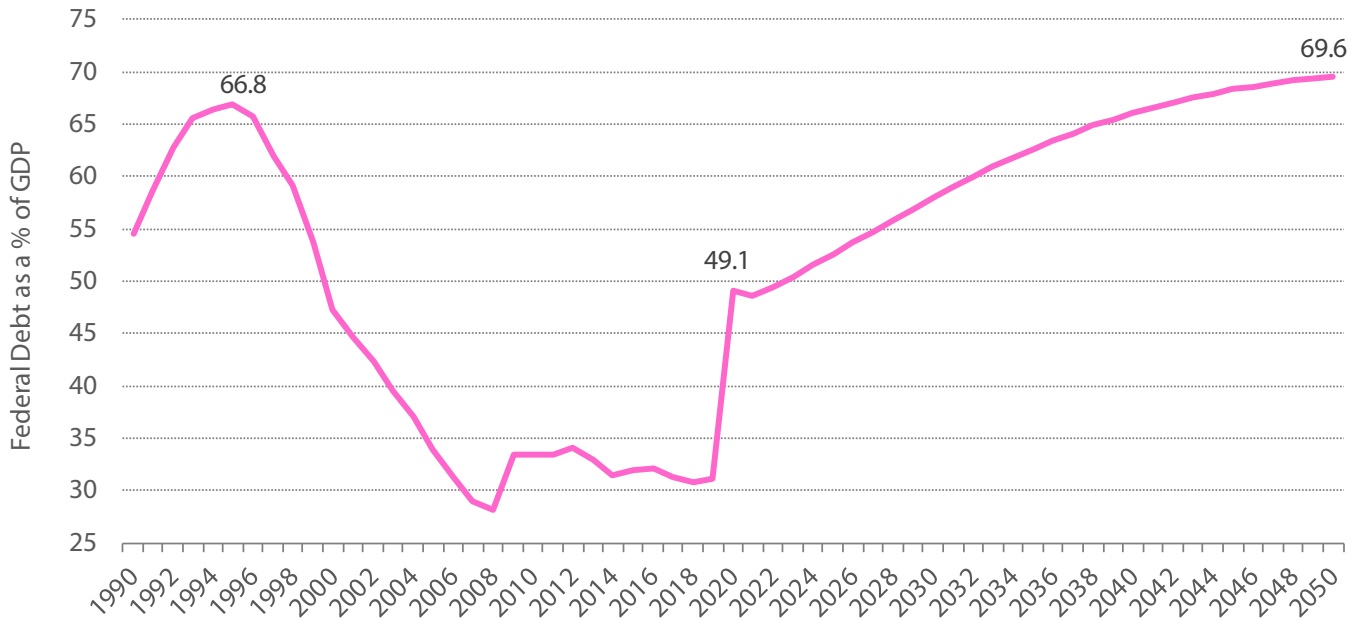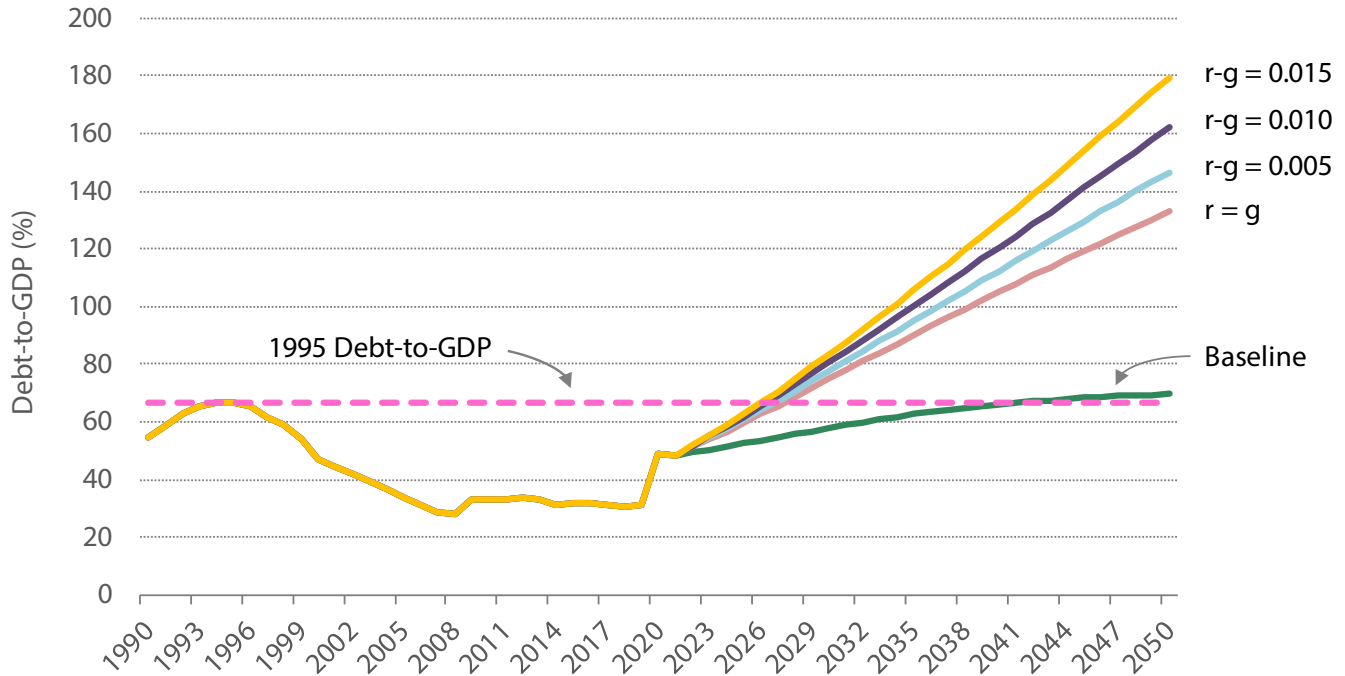

Sources: Canada, Department of Finance (2019a and 2020a); calculations by authors.

similar methodology to Jackson et al. (2017) and Ragan (2012), we present four new scenarios by making assumptions regarding the future average real interest rate (r) and the future real GDP growth rate (g). The difference between the real interest rate and the real GDP growth rate matters for two reasons. First, the federal government must make larger payments to service its debt if the real interest rate rises over time. Second, the debt-to-GDP ratio falls if the denominator grows faster than the numerator and nothing else changes. Put simply, the debt-to-GDP ratio is expected to rise when the real interest rate paid on federal debt is greater than GDP growth, holding all else constant. If the real GDP growth rate is greater than the real interest rate, the government's debt-to-GDP ratio can be expected to fall, everything else constant.

Since it is difficult to predict the future of interest rates with confidence, we employ four different scenarios to generate estimates of the federal debt-to-GDP ratio if interest rates increase. Figure 8 shows the results of the various scenarios. The scenario for which the federal debt-to-GDP ratio increases the least is when the real interest rate equals the growth rate of real GDP. However, federal government debt as a percentage of GDP in this scenario is still projected to surpass 100 percent by 2039 and could reach 132.8 percent in 2050. Federal debt accumulates the most when the real interest rate is assumed to be 1.5 percentage points higher than real GDP growth. Under this assumption, debt as a share of the economy climbs past 100 percent by 2034 and could increase to 179.6 percent in 2050.

Figure 8: Actual and Projected Federal Debt-to-GDP, Various Interest Rate Scenarios, 1990-2050

Sources: Canada, Department of Finance (2019a and 2020a); calculations by authors.

These projections illustrate the consequences of the structural imbalance between federal revenues and spending. In particular, increased interest expenses associated with a growing federal government debt leaves a smaller share of the government's budget available for other government priorities. Consequently, the federal government might have to reduce spending in areas such as national defense, social income supports, or other transfer payments to individuals. Higher levels of government debt have also been found to hinder economic growth (Woo and Kumar, 2015; Égert, 2015; Chudik et al., 2015) and therefore could bump our debt projections further upwards.

Conclusion

Federal finances will be in a precarious situation in the years ahead due to the economic effects of both Canada's aging population and COVID-19. Seniors will increase as a share of the overall population in the coming decades, whereas the working age share of the population will fall. A declining labour force participation rate will also have an adverse effect on the economy and result in slower growth for federal revenues. In the absence of substantial net in-migration of young and skilled workers to offset the adverse effects of an aging population on the active labour force and, possibly, on labour productivity growth, Canada is facing relatively slow rates of real economic growth in the future.

An aging population also means that federal expenditures on benefits for the elderly, such as Old Age Security and the Guaranteed Income Supplement, will increase in the future. For instance, spending on benefits for the elderly as a share of GDP is projected to increase nearly 0.5 percentage points by 2031. At the same time, total federal government spending relative to GDP is expected to increase from the 2019 level (16.3 percent) due to this year's sharp decline in nominal GDP. Our estimates suggest that a base case for 2021 federal expenditures could be 17.4 percent of GDP, but this number could grow substantially if any COVID-related spending measures remain in place beyond 2020.

Assuming that the 2019 rate of revenue to GDP (14.8 percent) is maintained between 2021 and 2050, the resulting imbalance between federal revenues and spending means that the budget will not be balanced any time in the next three decades unless there is a shift in public policy. Without such a shift the outcome will be a substantial increase in federal debt. In fact, our baseline projection suggests that the federal debt-to-GDP ratio could increase to 69.6 percent by 2050, the highest level since 1948. Assuming interest rates increase to equal or surpass the GDP growth rate, the debt-to-GDP ratio could exceed 100 percent between 2034 and 2039 depending on the gap between the assumed real interest rate and the growth rate of real GDP.

In sum, demographic changes and the financial fallout from COVID-19 will have a significant impact on federal revenues and spending for the foreseeable future. Any significant deterioration of federal finances will bring with it serious consequences for the Canadian economy, including the risk of repeating the mistakes of the 1960s to 1990s. Ultimately, the federal government will have to implement new policies to reduce spending and improve economic growth in order to avoid another debt crisis.

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Acknowledgments

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